muscles produced by volition is excited by intermittent nerve-impulses in the same way as the artificial tetanus produced by interrupted electrical stimulation of a nerve; but in the face of the weighty evidence against this assumption, very clear graphic demonstration is needed to carry conviction. A number of tracings are delineated in illustration of these papers; however, they aid but little in arriving at positive conclusions, as their indefiniteness seems to indicate the possibility of extrinsic irregularities dwarfing the rhythm of the contractions, which seem deficient in the symmetry one would expect in such rhythmic phenomena. Some of the curves almost suggest a disturbance of the instrument from the tremor caused by the irregular contractions or relaxations of individual bundles of fibres by which this lateral method of examining a muscle is so easily influenced.—*Journal of Physiology*, April, 1886.

FORMATION OF GLYCOGEN.

DR. F. RÖHMANN, of Breslau, made a series of experiments on rabbits, to test the effect of certain substances on the amount of glycogen produced by the liver. Taking two similar rabbits, he fed them for a certain time on a standard diet, to which, in the base of one was added the substance to be investigated, while the other was used for comparison (control-animal). As the result of four experiments he concludes that more glycogen is produced when asparagin is added to the diet. Glycocoll was also found, though not so obviously, to cause an increase in the formation of glycogen. From three experiments, he concludes that rabbits supplied with ammonium carbonate, together with carbohydrate diet, produce more glycogen than those fed on the same carbohydrates without any such nitrogenous substance.

By comparative experiments, using ammonium and sodium lactate, he is convinced that lactic acid, even in the presence of ammonia, does not belong to those substances out of which the organism can form glycogen.

Other experiments show that sodium carbonate does not act like the ammonia salt in increasing the amount of glycogen. He further concludes that the ammonium carbonate increases the amount of glycogen, independent of its acting as an alkali, and he thinks the above facts may throw some light on the theory of hepatic metabolism.—*Arch. f. d. Gesam. Physiol.*, May, 1886.

MATERIA MEDICA, THERAPEUTICS, AND PHARMACOLOGY.

UNDER THE CHARGE OF

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ASIMININE—A NEW ALKALOID.

We are indebted to Prof. Lloyd, of Cincinnati, for advance sheets of that part of the next issue of *The Drugs of North America*, containing the note by Dr. Bartholow on the new alkaloid recently discovered and named by Prof.

Lloyd—*Asiminine.* This interesting principle is obtained from *Asimina triloba*—the so-called "Ohio papaw," but which, as Prof. Lloyd informs us, is a very different plant from the genuine papaw.

The preparation used in this course of experiments was a hydrochlorate of the alkaloid, the solution having the strength of $\frac{1}{60}$th grain to the minim.

Asiminine was ascertained to have two distinct stages of action: a stage of excitement followed by calm, sopor, passing into stupor and insensibility. The condition of excitement is accompanied by a high degree of muscular activity. The muscular movements have a purposive direction like those of belladonna poisoning. A frog, for example, in this stage of the action of asiminine, goes through movements of jumping and swimming, and as the effects deepen, the movements of swimming occur with a certain degree of regularity, but are not rhythmical precisely. A slight touch at any point, but especially about the head, suffices to cause these movements until the narcotism reaches the extremest degree, but at last the movement is limited to the hind extremities and consists merely in separation of the toes and expanding the web.

Action on the motor nerves and muscles. Asiminine was ascertained to leave the motor nerves and the muscles in the normal state. When the sciatic was isolated, and the alkaloid prevented entering the limb, it was found that there was no difference in the action to stimulation of the nerve and the muscles.

Action on the sensory nerves. The acuteness of the sense of touch was apparently heightened. The faintest touch of the finest point until near the close of the action, caused prompt response, especially when the skin of the head was touched. These responses consisted in closure of the eyelids, depression of the head, and then the general muscular movement as of swimming. A stage of the action was after several hours reached, when very strong irritation caused no response, if so carefully done as to avoid awaking the sense of touch. If a toe were seized very dexterously without disturbing its position, it could be very strongly pinched without causing the least movement. If the skin of back or thigh were seized very carefully with fine forceps and pinched, no response followed, but any roughness of contact caused an immediate movement. It is found that if a saturated solution be applied to the mucous membrane of the mouth it causes numbness, and distinctly lessens the sense of pain. It is doubtful, however, whether this action can be utilized, since the solubility of the alkaloid is not sufficient to effect the necessary thoroughness of contact with the sensory nerve endings.

Asiminine slows without weakening the heart's action. Faradic stimulation of the accelerator apparatus increases the number of the pulsations. The vagus is apparently unaffected, until near the end, but further experiments are needed to determine to what extent.

During the stage of excitement the respiratory movements are increased; but as the condition of stupor deepens, they are correspondingly slowed. The most important and characteristic action of asiminine is that on the cerebrum; the stage of excitement with delirium in which movements of an apparently purposive nature occur; the stage of sopor and gradually deepening coma, with ultimate muscular resolution. If the hypnotic and anodyne action prove to be true of the higher animals and man, asiminine will be a useful addition to our therapeutic resources.

The Treatment of Progressive Pernicious Anæmia.

M. Henrot, of Rheims, in a paper read at the Medical Congress of Nancy on the subject of progressive pernicious anæmia (*Revue de Thèrapeutique*, Oct. 15, 1886), thus refers to the subject of treatment: Transfusion has proved unsuccessful. Very useful in the anæmia due to hemorrhage, it has not succeeded in this form of anæmia, and probably because the peculiar state of the blood is due to a microbe. Nevertheless, Quincke has had two successful cases. The most appropriate medication consists in the inhalation of oxygen, the subcutaneous injection of quinine in large doses, and in the use of arsenic. Balkins has effected sixteen cures by the arsenical treatment.

On Eulyptol and its Internal Administration.

Under the name *eulyptol* (not "eucalyptol") Schmeltz designates a remedy prepared from salicylic and carbolic acids, and essence of eucalyptus—six parts of the first named and one part each of the others. This preparation may perhaps be useful as a surgical antiseptic, but when administered internally in doses of from eight to ten grammes (ʒij to ʒiiss), it can only act as an antipyretic. With this view Schmeltz has prescribed it in rheumatism, in which malady the eulyptol, because of the salicylic acid constituent, lessens the pain and joint swelling. By its use typhoid evacuations are disinfected and modified in character. It has also proved useful in catarrhal affections of the respiratory organs. It is soluble in alcohol and ether, but less soluble in water. It does not cause so much stomach pain and flatulence as the salicylates.

The Curability of Arterial Cardiopathys.

In an elaborate memoir on the above named subject (*Bull. Gén. de Thèrap.* for October 15, 1886), Dr. Huchard has passed in review the methods of treatment most effective. Digitalis is always the most important medicine in the asystolic condition, but in the presystolic period—the prealbuminuric stage of Mahomed, of interstitial nephritis—the best remedy is the iodide in from one to three grammes (fifteen to forty-five grains) daily, continued over one or two, even four years. Under the use of this the arterial disturbance lessens, even disappears, whether the lesion is sclerosis of the coronary artery, myocarditis, valvular disease, aortitis, etc. If any are incredulous, our author reminds them how a graver lesion—aortic aneurism—is certainly made to disappear under the iodide treatment, as Bouilland first proved, and the fact afterward confirmed by Potain, Paul, and Bucquoy, of France, and Craig, Chuckerbutty, Balfour, and Bramwell, of England. It was M. Germain Sée who conceived the idea of employing the iodides continuously for the relief of increasing cardiac hypertrophy. "Iodide of potassium," says Dr. Sée, "is a most valuable cardiac medicine, and is effective, not only in the dyspnœa or asthma, but it powerfully modifies the muscular lesions, notably myocarditis, whilst at the same time it increases the contractile energy of the vessels, facilitates respiration, and maintains in a permanent way the tonicity of the heart."

Dr. Huchard holds that the iodide acts on the vessels in a similar manner, and to this power is to be ascribed its curative effects in sclerosis of the arteries, aortitis, angina pectoris, etc. But one of the conditions of the success of this medicine is prolonged administration. It is necessary to give the iodide of sodium during two or three years at the least, in the dose of one to three grammes (fifteen to forty-five grains) daily. This medication, notwithstanding there are idiosyncrasies to be provided for, is perfectly well borne, and if the iodide be suspended during six or eight days of every month, can be taken as stated above without the occurrence of serious iodism.

Dr. Huchard prefers the iodide of sodium over the corresponding potash salt, because it is less toxic, the salts of potash endangering the production of *potassæmia* (uræmia), which, as Messss. Feltz and Ritter have demonstrated, is due to the retention in the blood of the potash, rather than of the other constituents of the urine.

ON THE ACTION OF CAFFEINE AS A DIURETIC.

In an elaborate research into the mode of action of caffeine, SCHRÖDER (*Archiv für experimentelle Pathologie und Pharmacologie*, October, 1886, Band 22, S. 39) states the following conclusions:

Caffeine must be regarded as causing diuresis by a direct stimulation of the renal epithelium. Hitherto no remedy has been known that affects in so high a degree the urinary secretion. In caffeine we have a remedy whose action on the kidney may be compared to that of pilocarpine on the salivary and cutaneous secretions, in so far that both cause a powerful secretion from the glands, but in the mode of the action there are important differences. Pilocarpine stimulates the excito-secretory nerves, while caffeine acts directly on the renal epithelium. It is not possible, as yet, to localize the part of the tubules on which it acts.

Very various have been the views entertained by clinicians as to caffeine's mode of action. Some regard it as acting in a manner similar to digitalis, holding that, like the latter, it slows the pulse and raises the blood-pressure. This parallelism cannot be admitted, and Maki has proved that their influence on the heart is different. Both raise the blood-pressure, but the mode in which this is effected differs. Digitalis acts on the heart muscle, increasing its power, whilst caffeine raises the blood-pressure by stimulating the vasomotor centre. It cannot be too strongly stated, that for the production of a diuretic effect, only those remedies are useful that raise the blood-pressure by increasing the power of the heart. If the blood-pressure is increased merely by stimulating the vasomotor centre, the renal secretion is checked in an exactly opposed sense. The diuretic action does not influence the manner in which the blood-pressure is raised. The pulse becoming fuller under caffeine, and also the slowing of the beat often observed, have led to the opinion that this agent acts like digitalis. Some physicians, however, like Gubler and Brakenbridge, have not referred the diuretic to the supposed cardiac action, but to a direct effect on the kidney. In one of the most recent discussions on this subject by Bronner (*Dissertation*, Strassburg, 1886) the doctrine of the parallelism of caffeine and digitalis is strongly opposed. That caffeine exerts a marked action on the heart's movements, even in cases of cardiac failure, cannot be affirmed. On the contrary, when the diuretic effect occurs, slowing of the pulse-rate is not observed. Nor did the diuresis take place in the same way, as from digitalis. Thus, the pharmacological and clinical observations have alike demonstrated that the diuretic action of caffeine is entirely independent of any effect on the heart.

The stimulation of the vasomotor centre with the attendant excitement produced by caffeine, is the cause, not only of annoyance to the patient, but of interference with the diuretic action. The uncertainty of the diuretic action which is often complained of, is due to the varying excitation of the vasomotor centre in different persons. To eliminate this central excitation, one of two courses may be pursued: either to combine with caffeine an agent opposing its vasomotor action, or other members of the caffeine group that have the diuretic without the vasomotor effect, may be tried. Very good results have been obtained by the conjoint use of paraldehyde.

SULPHATE OF SPARTEINE.

DR. HANS VOIGHT publishes the results obtained from the use of the sulphate of sparteine, in Prof. Nothnagel's clinic (*Centralblatt für die gesammte Therapie*, October, 1886). These interesting observations were made in consequence of the very favorable results obtained from sparteine by Prof. Sée. It was first employed in 8 cases of valvular affections, and afterward in cases in which the heart's action was secondarily impaired (4 cases of emphysema, 2 of pleuritis, and 1 of catarrhal jaundice). The effect of sparteine, after several days' administration, was studied by means of Dudgeon's sphygmograph. The results were as follows:

In small doses sparteine increases the energy of the cardiac contractions, the pulse becomes stronger and higher, and the tension of the arterial system rises. The frequency of the respiration is at first somewhat increased, but after further use of the remedy is somewhat lessened. The diuretic action is quite decided, and in correspondence with the increased cardiac action. Not unfrequently a slight narcotic action is manifest in the form of quietude and disposition to sleep. Intoxication symptoms, such as dizziness, headache, palpitation, and nausea, seldom occur after the smaller efficient doses ($\frac{1}{15}$–$\frac{1}{4}$ gr.), and when manifest are unimportant, quickly passing off; but if continued despite these symptoms they afterward cease.

Sparteine, as compared with the caffeines, with adonis vernalis (*adonidine*) and with convallaria, is manifestly superior in respect to the precision of the doses, and relative safety of administration. It is indicated in the valvular affections, when compensation has not been effected and the pulse is small and weak; in valvular insufficiency without any special compensatory disturbance, as a regulating and tranquillizing remedy; in insufficiency of the heart muscle without valvular lesions; in pericarditis; as a diuretic, in which respect it is quite unsurpassed, and in conjunction with digitalis to promote the action of the latter drug.

We need hardly remind our readers that sparteine is one of the principal constituents of scoparius (broom).

OBSERVATIONS ON THE PREPARATIONS OF CANNABIS AND CANNABINUM TANNICUM.

DR. BUCHWALD, in the *Bresl. äerztl. Zeitschr.*, No. 24, passes in review some of the newer medicaments obtained from *Cannabis indica*, and attempts to fix their precise value as compared with the established hypnotic and anodyne remedies.

The following are amongst the substances contained in the hemp plant to which its intoxicating qualities are in part attributed: *Cannabin* or *Haschischin* of T. and H. Smith; *Oxycannabin*, by Martius; *Cannabin* or *Hydracannabin*, by Personne, and *Cannabinine*, by Siebold and Bradbury. None of these have been subjected to clinical investigation. But a new era began with the cannabis preparations when Merck's *Cannabin tannate* was produced and made the subject of a physiological investigation by Fronmüller, who recommended it as a substitute for morphine under some circumstances. At first, using small doses, he found that larger ones were necessary, and at length settled on 3 to 4 grains as the hypnotic quantity of the Cannabinum tannicum. The pharmacopœia commission had stated 1 gramme (15 grains) as the maximum single dose and 2 grammes per day. The doses used by Fronmüller, sufficed in most cases to cause quiet sleep without any unpleasant after-effects. It is the more valuable, also, in that it does not check the secretions nor constipate. Intoxicating effects were observed only after large doses—7½ grains—yet in some cases of great pain as much as 20 grains were given. Fronmüller's statements have not been generally accepted. Eickholt observed that sleep was produced by it only after the larger doses mentioned above were given. Pusinelli concluded after his research that it may be a useful remedy in purely nervous, habitual, and neurasthenic wakefulness, but that it is not a pain-relieving remedy, and must be given in doses of from 5 to 15 grains, not being a dangerous agent. Stupefaction is caused by it; also dizziness, hebetude of mind, and, in some instances, instead of a tranquillizing action, excitement, nervous unrest, and increased wakefulness follow.

As tannate of cannabin has become quite cheap, Buchwald has used it in numerous cases in public and private practice. His conclusion is that the objections made by the authorities above mentioned to it are in the main justified, and that it is decidedly inferior to morphine, chloral, and paraldehyde as a hypnotic. He finds the excitant action so constantly unpleasant that patients become averse to taking it.

ANTIFEBRIN: A NEW FEVER MEDICINE.

DRS. CALIN and HEPP publish the results of some observations made on antifebrin at the clinic of Professor Kussmaul, of Strasburg (*Centralblatt für die gesammte Therapie*, Oct. 1886). Antifebrin (or phenylacetamid) is a pure white, crystalline, odorless powder, slightly caustic to the tongue, almost insoluble in cold water, but easily soluble in warm water, and freely in alcohol, and fluids containing alcohol, as wine. It has neither acid nor basic properties, and withstands the action of most reagents. Notwithstanding its close relations to aniline chemically, antifebrin can be administered in relatively large doses without causing toxic effects. The temperature of healthy animals is not affected by it. The clinical researches were made on twenty-four fever patients. It was administered in single doses, ranging from four to fifteen grains, in wafers, or simply stirred up in water, or dissolved in wine. Until now, thirty grains in twenty-four hours have not been exceeded; but the size of individual doses must be determined by the character, the severity, and the stage of the fever, and also the idiosyncrasies of the patient. Notwithstanding its insolubility, the effect of antifebrin is quite as rapidly produced, and is four times stronger than that of antipyrin. Up to this time it has not failed in its action. The impression made by it on pyrexia is better effected by larger doses at longer intervals than smaller doses at shorter intervals.

URETHAN BY SUBCUTANEOUS INJECTION.

DR. **HANS ROTTENBILLER** communicates to the *Centralblatt für Nervenkrank.*, etc., No. 10, 1886, his experiences with the use of urethan subcutaneously. His observations were made on 14 patients, there being 240 administrations. Of these 14, 6 were imbecile, 1 senile dementia, 1 idiot, 1 chronic insanity, 1 epileptic, and 4 dementia paralytica. He began with seven and a half grains, but this had an effect on one only, a paralytic with wakefulness. In the other cases, with doses from seven and a half to fifteen grains, he obtained sleep for four hours, only the first few days; afterward, only one to two hours' sleep. From one dose of thirty to sixty grains, six to eight hours of tranquil sleep were procured in 8 patients. With 4 others (1 paralytic and 3 imbeciles), the same amount caused only two to four hours' sleep. In a case with intense maniacal excitement and lively hallucinations, urethan failed, and paraldehyde was resorted to with success. After receiving the injection of urethan, the patients fell asleep in fifteen to thirty minutes; some woke up in two or three hours, but remained quiet, and, perhaps, fell asleep again in a half-hour. There were no unpleasant after-symptoms, except vomiting in one case.

Rottenbiller concludes that urethan, in the large doses of two to four grammes (thirty to sixty grains), causes six to eight hours of quiet sleep, but larger quantities are not well borne. The principal excellence of the remedy is that it produces no untoward results. On one hand is the consideration that several hours' sleep can be obtained from large doses, and sometimes no more than two to four hours'; on the other hand, the high price of the drug, and this it was that induced Rottenbiller to use it subcutaneously.

NAPHTHALIN IN AFFECTIONS OF THE URINARY ORGANS.

At the session in August, 1886, of the French Association, held at Nancy, **M. DE PEZZER** made a report on the use of naphthalin in affections of the urinary passages, with fetid urine. The daily quantity administered was one gramme and a half (about twenty-three grains). The fetidity disappears in from three to five days, and the urine changes from muddy, alkaline, and purulent into a limpid liquid, neutral or acid in reaction, and free or nearly so, from pus. And this result is accomplished without disorder of the digestive organs, without increased diuresis, and, perhaps, with a favorable action on the kidneys and bladder in pyelonephritis and cystitis. It has thus proved superior to all other antiseptics used in these affections, and its administration by the stomach is preferable to local application.

M. BOUCHARD thinks he has obtained permanent disinfection of the urine, by the administration of naphthalin in doses which cause ill effects if given too long. He expresses the belief, also, that naphthalin is decomposed into naphthil-sulphite of sodium, which is a strong disinfectant.

TREATMENT OF THE PAINS OF LOCOMOTOR ATAXIA BY ETHER AND METHYL CHLORIDE SPRAY.

DR. RAISIN (*Thèse de Paris*, 1886; *Bull. Gén. de Thérap.*, Oct. 15, 1886) finds that the pains of locomotor ataxia are amenable to treatment by refrigeration. Spray of methyl chloride and of ether notably relieves when the pain comes on. It should rather be directed against the seat of pain, than along the spine, although the latter may be complementary.

Ether spray is less disagreeable, more convenient, and has fewer disadvantages than methyl chloride spray. It may be added that, for relief of local pain, ethyl bromide spray has proved to be highly efficient, and has, in some respects, advantages over the ether spray. Dr. Raisin makes no allusion to this use of ethyl bromide.

MEDICINE.

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RECENT STUDIES IN PNEUMONIA.

FRÄNKEL (*Zeitschrift für klin. Med.*, Bd. x. H. 5 u. 6, 401–462) gives an exhaustive account of his bacteriological investigations, dividing his subject as follows:

THE MICROBE OF SPUTUM-SEPTICÆMIA.

He not only tested the infectious nature of the sputum of patients suffering from pneumonia, as well as of those affected by other diseases, but also examined that from his own mouth. He found that some of these sputa were either totally harmless when inoculated, or produced forms of disease differing from the sputum-septicæmia described by Pasteur, Sternberg, and others. The author's own sputum, on the other hand, proved itself most active in producing septicæmia. His method of procedure consisted in thoroughly mixing not too small a quantity of sputum with five to ten cubic centimetres of a seven per cent. salt solution; one to two syringefuls were then injected into the animals. Rabbits appeared to be the most susceptible to the virus. In a few hours they exhibited a rise of temperature to 41° or 42° C.; indisposition to eat; somnolence; somewhat laborious respiration; usually some twitching, and in thirty-six to forty-eight hours they were dead. The spleen